APPENDIX E

Reasonable Foreseeable Development Scenario for Uranium

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MAPS

INTRODUCTION

Uranium is mainly used to fuel nuclear power plants. In April 1997 there were 437 nuclear power plants in operation worldwide; about 25%, or 108 of these plants are in the United States. An additional 28 plants worldwide were under construction. The US produces about 7% of the world's uranium. Uranium demand is slightly more than double uranium production worldwide.

US Geological Survey geologist Dr. David Love discovered the first uranium occurrences in the Buffalo Resource Area (BRA) in October 1951 (Mrak 1958). The discovery was on the south flank of North Pumpkin Butte in Section 24, T. 44 N., R. 76 W. (Minobras 1976). The area is now part of the Pumpkin Buttes Uranium District (Harris 1985).

Two uranium districts have been identified in the BRA. The Pumpkin Buttes District is the larger of the two, about 940 square miles, and is located in southwest Campbell and southeast Johnson counties. Mining activity is presently occurring in the Pumpkin Buttes District. The Kaycee Uranium District is smaller, about 40 square miles, and is located in south-central Johnson County. Mining has not occurred in the Kaycee District since the early 1980s.

Uranium deposits in the Pumpkin Buttes District are primarily "roll-front" type deposits, mostly in Eocene-age Wasatch Formation sandstones. Uranium was precipitated from oxidized groundwaters at oxidation-reduction interfaces. Uranium in these deposits generally occurs as the mineral uraninite and coats sand grains. Ore-grade mineralization generally averages a few tenths of a percent uranium. Ore grades in small areas near the center of an orebody may be as high as a few percent uranium. Roll-front deposits are seldom more than about 15 feet wide and 10 feet thick but may extend for several hundred feet.

OCCURRENCE POTENTIAL FOR URANIUM MINERALIZATION

In the BRA, uranium occurrences have been documented in the Tensleep, Sundance, Fort Union, and Wasatch formations and in Precambrian crystalline rocks. Map 1 shows the potential for uranium occurrence in the BRA and is based on the Wyoming Geologic Map (Love and Christiansen 1985) and the Metallic and Industrial Minerals Map of Wyoming (Harris et al. 1985). The potential for uranium occurrence does not indicate that an economic uranium deposit exists, only the probability of finding anomalous uranium mineralization. The definition of high, moderate, and low potential for uranium occurrence are listed on map 1.

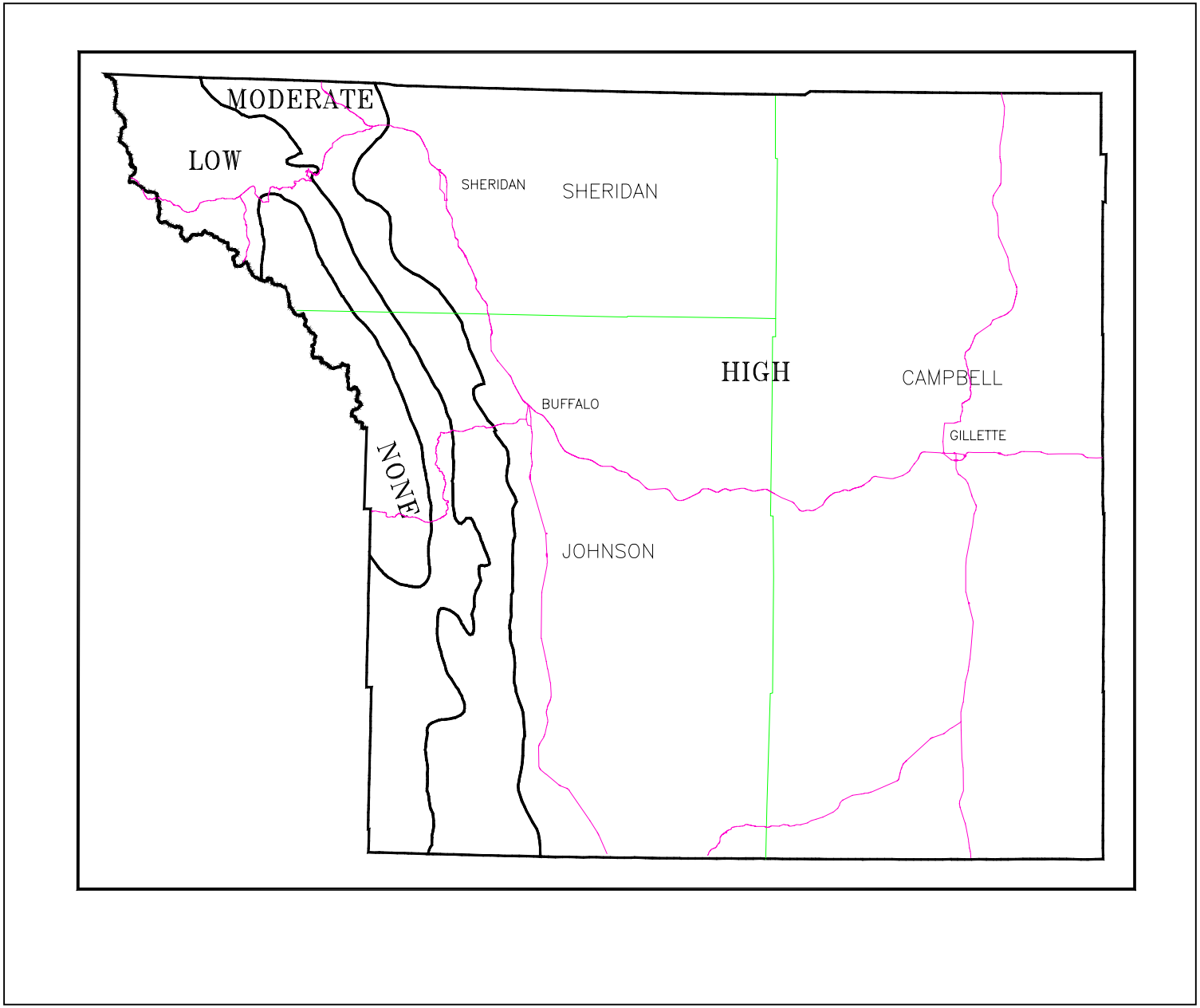
CURRENT AND ANTICIPATED URANIUM DEVELOPMENT ACTIVITY

Two *in situ,* leach-uranium mine fields are currently operating in the BRA. Three others are planned. All five mines are in the Pumpkin Buttes district. Mining activity is not currently planned for the Kaycee Uranium District. During 1995, 0.44 million pound of uranium oxide was produced from the BRA. In 1996 production increased to slightly more than 0.7 million pound. During the next five to ten years annual production from the BRA will probably range from 0.7 to 0.9 million pound of uranium (Miller 1997). Virtually all of the production will be from the Pumpkin Buttes District (Harris 1997). By comparison, statewide production will probably range from 5 to 15 million pounds (Miller 1997).

Currently worldwide production of uranium is approximately 70 million pounds per year; 6.3 million pounds are produced in the US.

Map 2 shows the development potential of the BRA. It is an estimate of future uranium development activity. The map is based on current and anticipated trends in the nuclear industry. The level of activity is measured by the number of drilling rigs used to explore and develop uranium ore deposits. Most of this drilling will be to support *in situ* mining activity. Most of the uranium drilling activity will occur in the Pumpkin Buttes District. Additional work is needed to accurately locate and evaluate uranium deposits in this area. Uranium exploration will probably occur, but it will not be extensive unless there is a considerable increase, or anticipated increase, in the price of uranium. This is not considered likely to occur.

OCCURRENCE POTENTIAL MAP



URANIUM OCCURRENCE POTENTIALS

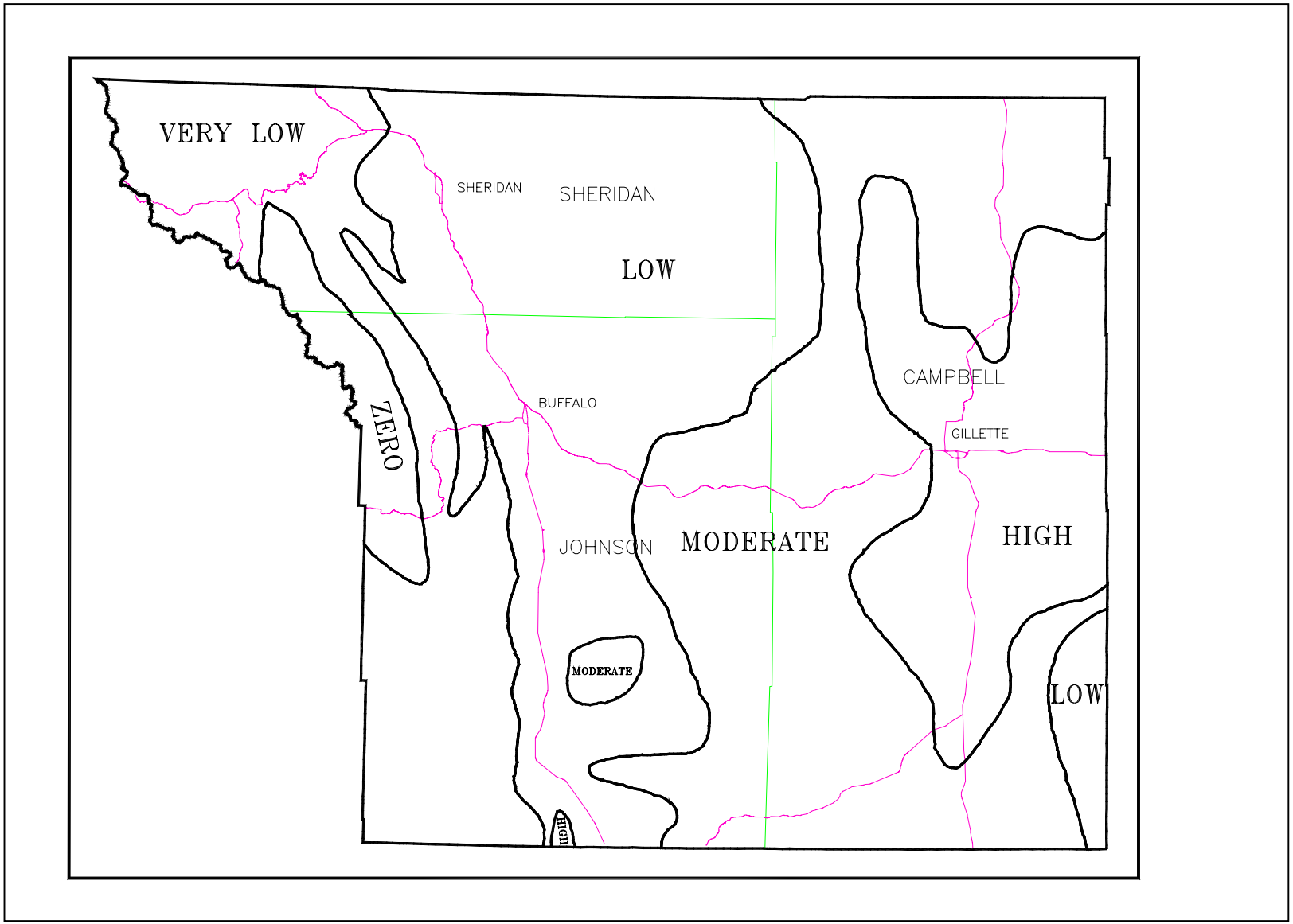
Low--No known, published record of verified, significant uranium occurrences. Geologic conditions do not appear to be adequate for large, mineable uranium deposits.

Moderate--Verified uranium occurrences are present, but no large or mineable deposits are known. Geologic conditions are present but not optimum for uranium deposits.

High--Many verified uranium occurrences are present and large, possibly mineable deposits, may exist.

Very High--Uranium mining area with current or past mining activity. Discovery of mineable deposits is probable.

DEVELOPMENT POTENTIAL MAP



URANIUM DEVELOPMENT POTENTIALS

Low--No active mining and little or no development drilling. Surface geologic investigations will probably occur. The average number of drill rigs working on a year-round basis during the next 10 to 15 years will be less than one.

High--No currently active mines. There may be a relatively small amount of mining activity in the next 10 to 15 years. Exploration and development drilling will probably occur. The average number of drill rigs operating annually will be less than two.

Very High--Active mining and development area. During the next 10 to 15 years mining is expected to continue. The average number of drill rigs operating annually may be as high as 50.

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